

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 3 2017/2018

### TSE2101 – SOFTWARE ENGINEERING FUNDAMENTALS

(All Sections/Groups)

30 MAY 2018  
09:00 AM – 11:00 AM  
(2 Hours)

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#### INSTRUCTIONS TO STUDENTS

1. The total number of pages for this examination paper is five(5) pages including the cover page.
2. This examination paper contains a total of eight(8) questions divided into two(2) different sections, Section A and Section B, respectively. Each section contains four(4) questions.
3. You are required to answer a total of four(4) questions. You must answer any two(2) questions from Section A, and any two(2) questions from Section B.
4. Each question carries an equal score of 15 points. The total score for this examination paper is 60 points.

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## SECTION A

(Answer any two(2) questions in this section)

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### QUESTION A1

**A1(a)** List three(3) desirable characteristics of a software engineer. Provide one(1) reason each why you consider the characteristic as desirable.

**A1(b)** Discuss one(1) important consequence of software being intangible (meaning we cannot touch, smell or feel software).

**A1(c)** What are the five(5) activities that comprise the Software Development Life Cycle (SDLC) processes?

**A1(d)** Describe briefly (in less than 200 words each) the following design architectures  
(d1) multi-tiered architecture  
(d2) peer-to-peer architecture  
(d3) parallel and distributed architecture

**A1(e)** Name three(3) different software programming paradigms.

[5 x 3 points = 15 points]

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### QUESTION A2

**A2(a)** Why is the Waterfall Process Model considered prescriptive? You may provide suitable examples in your answer.

**A2(b)** Describe one(1) advantage in implementing the Spiral Process Model in software development.

**A2(c)** Why is it a bad thing when errors in the Waterfall Process Model get discovered only when it reaches the software testing stage? Can we discover the errors earlier?

**A2(d)** Describe the meaning of the following terms used in software engineering:  
(d1) process framework  
(d2) work breakdown structure  
(d3) deliverable

**A2(e)** Discuss this statement. *"When you write codes, keep conditional logic as simple as possible."*

[5 x 3 points = 15 points]

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Continue ...

**QUESTION A3**

**A3(a)** How do you measure and monitor progress against plans in project management?

**A3(b)** Discuss the importance of coordination activity in project management.

**A3(c)** Why do people plan for milestones in a project? What are milestones for?

**A3(d)** Explain the following concepts in Object-Oriented Design (OOD).

(d1) Encapsulation

(d2) Abstraction

(d3) Polymorphism

**A3(e)** Discuss this statement. *"In software design, understand the problem you are trying to solve."*

[5 x 3 points = 15 points]

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**QUESTION A4**

**A4(a)** Provide three(3) principles that guide your planning activity in software project management.

**A4(b)** Describe two(2) differences between a web application and a desktop application.

**A4(c)** What does it mean when it was said that, *"in this project the focus on software requirements is the control and handling of events"*?

**A4(d)** In software design, explain the meaning of the following terms

(d1) data persistence

(d2) distributed computations

(d3) concurrent or parallel processes

**A4(e)** Discuss the statement. *"All tests should be traceable to customer requirements."*

[5 x 3 points = 15 points]

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**Continue ...**

## SECTION B

(Answer any two(2) questions in this section)

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### QUESTION B1

**B1(a)** In software requirements modeling, what do you understand by the terms “*flow-based model elements*.”

**B1(b)** Provide three(3) reasons why requirements must be documented.

**B1(c)** Provide three(3) examples of non-functional software requirements. Provide one(1) reason each why you consider them as non-functional.

**B1(d)** Name one(1) example application, for each of the following category of CASE tools (Computer Aided Software Engineering).

(d1) graphical modeling and design

(d2) software code construction

(d3) software project management

**B1(e)** Discuss this statement. “*Regression testing is also called black box testing.*”

[5 x 3 points = 15 points]

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### QUESTION B2

**B2(a)** How does object-oriented design solve the function ownership problem in structured programming?

**B2(b)** Briefly explain how the data initialization problem arise in structured design.

**B2(c)** Describe two(2) benefits of multiple inheritance in object-oriented design.

**B2(d)** Describe (in less than 300 words) the concept of CMMI (*Capability Maturity Model Integration*) levels on the subject related to software quality.

**B2(e)** Discuss this statement. “*In an embedded system, the software application is embedded as part of a complete device often including hardware and mechanical parts.*”

[5 x 3 points = 15 points]

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Continue ...

**QUESTION B3**

**B3(a)** Provide three(3) reasons why we want to implement design patterns in our software.

**B3(b)** Describe one(1) technique for interfacing software codes with components built using different programming languages.

**B3(c)** What are the differences between creational and structural design patterns?

**B3(d)** Illustrate the differences between errors, bugs and failures according to the standardized international definitions in software testing.

**B3(e)** Discuss this statement. *"In object-oriented design, an interface class has no implementation"*.

[5 x 3 points = 15 points]

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**QUESTION B4**

**B4(a)** Provide two(2) types of information that can be derived from reverse engineering.

**B4(b)** What is the purpose of Software Configuration Management (SCM)?

**B4(c)** Describe two(2) characteristic stereotypes of bad software developers.

**B4(d)** In structured software design, the (switch..case) statement is used for conditional branch selection. Draw an appropriate activity diagram to illustrate this (switch..case) code construction.

**B4(e)** Discuss this statement. *"Do not write codes in a manner that is not testable."*

[5 x 3 points = 15 points]

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